

## Learning Method and Its Influence on Nutrition Study Results Throwing the Ball

Samsudin Bayu Nugraha  
Sport Science Faculty, State University of Jakarta  
abdulsukur69@yahoo.com

### Abstract

This study aimed to know the difference between playing and learning methods of exploratory learning methods to learning outcomes throwing the ball. In addition, this study also aimed to determine the effect of nutritional status of these two learning methods mentioned above. This research was conducted at SDN Cipinang Besar Selatan 16 Pagi East Jakarta in 2010. The method used is an experiment with a 2x2 factorial analysis through random sampling with a sample of 24 students. The analysis technique used is the analysis of variance (ANAVA) two-way, followed by Turkey test at the 0.05 level of significance. This study concludes that overall there are significant effects between the methods of learning to play with the exploration of learning methods to learning outcomes throwing the ball. This study also concluded that the interaction between teaching methods and nutritional status.

**Keywords:** method learning, nutrition, elementary school

### PRELIMINARY

Children as the future generation and struggle to bring lofty ideals to advance the nation, because nation hopes in their hands. To realize these goals the government provides educational facilities to the community. Education is provided to form a human, which means that the child is able to establish education through choice and accountable for his actions. Education also develops personal uniqueness in order to reach optimum capacity of work. This means that education is also aware that every child has a different intelligences that portion. Physical development of the Elementary School (SD) is a period of rapid physical growth, can be clearly seen in the growth of the motor, muscle coordination very striking. Growth learning outcomes both rough and smooth on the child will not develop with maturity for granted, but these skills must be learned through exercises.

The development of learning outcomes are influenced by several factors , namely the presence of a child's learning readiness, learning opportunities, practice opportunity, capital good, guidance, and motivation of teachers or educators. The skills must be learned individually or in groups and skills should be learned one by one. In order for the growth and development of children , especially in gross motor development can succeed as expected , then a lot of things that influence it, namely creativity and the ability of educators to choose the method of activities that can be given to students in learning in elementary school. Physical development activities include activities which lead to the motor activity of which is to train with sports activities. One characteristic of early childhood is moving, the learning environment provides facilities for these conditions. That play engaging learning environment, meaningful, flexible, familiar and provide opportunities for exploration of movement allows the child. The problem is very complex as the limited ability of teachers to teach the sport, especially for primary school teachers and kindergarten because they have to teach to the whole subjects or developmental aspects. As a result of lack of competent teachers to teach the sport to give the effect of the child's motivation to want to try and try to love the sport.

Besides the importance of optimizing the development of motor skills through the learning of physical education at the elementary level for this stage set the stage and then is entered at this stage of expertise. If the child's development of basic movement capable to do well, the better the child's movement when entering the stage of motion expertise. Interest of the child to the sport, the development of noble values obtained indirectly as sportsmanship, discipline ,hard work, obeying the rules , and so forth , as well as the development of seeds, is a positive value that can be developed from the sport. But in fact does not indicate so. Existing physical education teachers are not able to develop the child's motivation and interest in the sport. Failure physical education teacher can be seen from at least the interest of children to sports, which have an impact on the lack of quality seeds sportsmen in Indonesia, Indonesia's sporting achievements on the wane in the eyes of other countries. Bucher (1979) suggested that the primary purpose of education is :

1. The Child should be seen as individuals with physical, mental, emotional and social different.
2. Movements and cognitive skills should be emphasized.
3. Children should improve muscular strength, endurance, flexibility, ability to role in improving physical fitness.
4. The social growth in the sport should be an important part of all programs.

Physical education is essentially an integral part of the education system as a whole, aims to develop aspects of health, physical fitness, critical thinking skills, emotional stability, social skills, reasoning and moral

action through physical activity and sport. Thus developing used as part of physical education in elementary school, because of physical development in primary school aims to develop students' learning outcomes in rough exercise the body for growth and health. Physical development of the child requires in order to improve physical fitness as well as to master the basic movements that may be required in any learning activity physical motion.

Physical Education is a means to encourage the development of motor skills, physical abilities, knowledge, reasoning, appreciation of the value of (attitude-mental-emotional- spiritual-social), and habituation healthy lifestyle that is geared to stimulate growth and balanced development. Improve community health status is indispensable for the development program implemented by the Indonesian nation. One of the efforts is to improve health status improvement of people's nutrition. Balanced diet can improve endurance, can increase intelligence and make normal growth. Especially for problems Poor nutrition is often found lacking or sudden is malnutrition, especially in children , is still a very difficult problem addressed by the government, although the causes of malnutrition itself is basically very simple, namely the lack of intake (consumption) of food to feed the need someone, but not by the government and society because the problem of malnutrition is a matter of the level of household food security, but strangely in several province - affluent, self-sufficiency that has even been distributed evenly to the level of the household (e.g. Raskin program), is often found in cases of severe malnutrition , whereas before this happens malnutrition, has gone through several stages starting from the weight loss of the ideal body weight of a child until the child looks very bad ( poor nutrition).

So the real problem is public or toddler not know the family way of assessing children's weight status (nutritional status) or also do not know the growth pattern of the child's weight, that society or family only knows that the child should be given a meal as well as adults should eat every day. Observation and monitoring of the nutritional status of school -age children actually is the responsibility of us all. Because the school is one of the strategic places in the child's life, then the school can function properly as one institution that can help or participate in efforts to optimize growth and development of school-age children.

## 2 . Throws Ball Skills

Learning motion can be interpreted as a change of place, position, velocity of the body or parts of the human body that occurs in a dimension of space and time and can be observed objectively. such as by Lutan ( 102:1988 ) in the book of Motor Skill Learning Theory and Method which it is a set that related to the training or experience that leads towards permanent changes in skilled behavior. In the study of motion, training is a process that is most important in order to motor skills.

The motion refers to something that can be observed in the changes in the location of what parts of the body. Movement is the peak of the action which the motor processes. Said regular movement is broadly defined but generally means that the action is clear from moving. Here are some terms that are often used movement, namely; (1) The pattern of movement, (2) mandated by the base pattern, (3) Expertise sports (David L. Gallahue, 16:2006). Motion is a key element in the child's motor development.

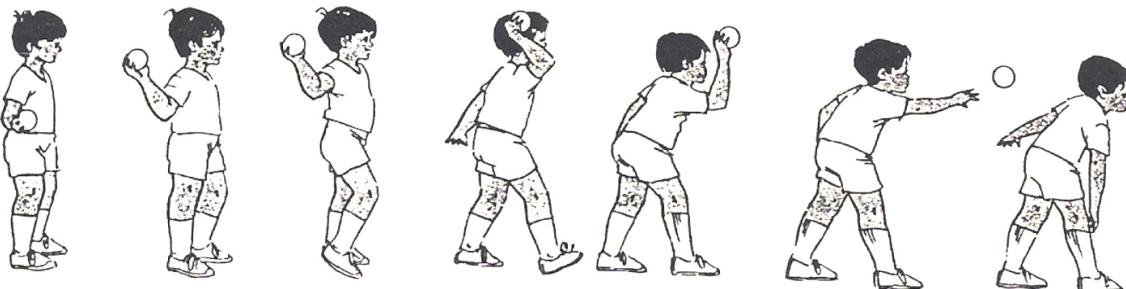
Therefore, the child's motor skill development will be visible through various movements and games they can do. Skills throw the ball into the fundamental manipulative movements. This movement is characterized by a child's ability to give and receive objects outside of the child, for example, throwing and kicking (John C. Ozmun, 49: 2006). Object manipulation activities enabling children to explore the relationship of the movement of objects in a room. Manipulative ability is a combination of locomotor movement and strength. Therefore, the ability to develop manipulative means to develop locomotor ability and strength as well. Some manipulative movement patterns that reach, hold, release, throwing, catching, hitting, kicking. Throw a target in the body , the feet do not move , the ball thrown by moving the forearm alone at the age of 2-3 years, the same as before but the agency has begun to move aged 3.5 to 5 years , foot step forward in accordance with the throwing hand of age 4-5 years , the ability to throw the boys better than girls at age 5 years or older and the average has been able to throw well as physical maturity at age 4-6 years (John C. Ozmun. 52 : 2006).

When children are able to perform all motor movements, then they will be motivated to move the motor wider. Physiological activity increased sharply. As if the child does not want to stop doing physical activity, both of which involve gross motor and fine motor. By the time it reaches maturity to be actively involved in physical activity characterized by the readiness and motivation of good and along with this, parents and teachers need to provide a variety of opportunities and experiences that can enhance the child's motor skills optimally. These opportunities are not only in the form of allowing the child to physical activity but supported with a variety of useful facilities for the development of gross motor skills and fine motor skills.

The process of throwing children 4-8 years divided into two stages proposed by Carl Gabbard, namely the base rate and mature (Carl Gabbard, 238 : 1987). The base rate of the age of 4-5 years, children throw with using two hands, throw performed by children under or above. This level indicates better control and coordination of rhythmic movements starters better anyway. Spatial and temporal movement further increased, but in general still seem limiting or excessive, although better coordination. Intelligence and physical function increased child through the process of maturity. As expressed by George Graham, although the style (hands

under and above) and throw an assortment of purposes, but the basic pattern consists of: (1) Objects that are released by using one or two hands, (2) the early stages, speed / strength built to throw, (3) the actual pushing stage with the power to release the object, (4) support the next stage of body control and balance when doing the throwing motion (George Graham, 460 : 1987).

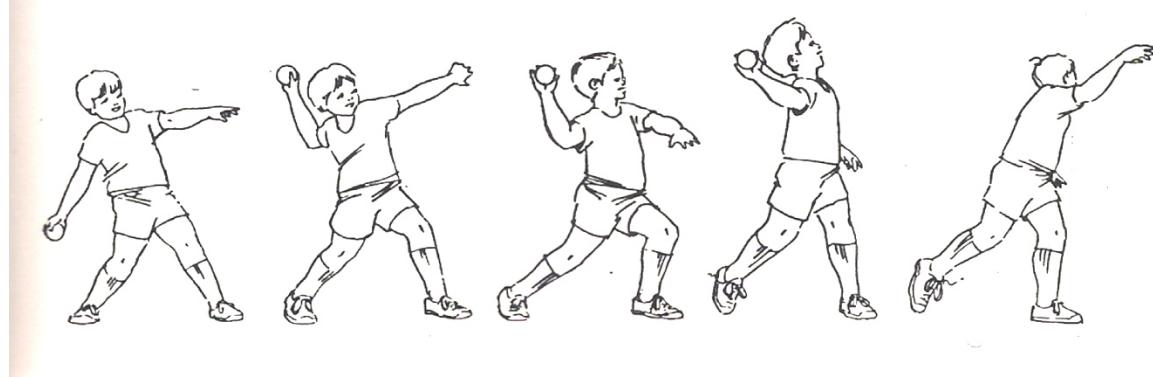
Figure 1: The basic level of the throwing hand



Source: Carl Gabbard, Elizabeth Le Blanc, Susan Lowy, Physical Education Building The Foundation for Children, (New Jersey: Prentice Hall, Inc., 1987)

Throwing at a rate of an adult or mature age 6-8 years has experienced a series of coordinated motion. This level is characterized by mechanical efficiency, coordination and controlled performance. Manipulative growing expertise in coordinating visual and motor skills, such as catching, kicking, playing volleyball and so on.

Figure 2: The rate of adult / mature throwing one hand



Source: David L. Gallahue, John C. Ozmun. Understanding Motor Development (Infants, Children, Adolescents, and Adults). 2006, McGraw-Hill, New York, USA.

Thus the gross motor skills of young children is a skill that involves large muscle strengthening. Gross motor skills related to movement . Three stages of development of the movement in the early childhood movement is balance, locomotor, and manipulative. The movement consists of dynamic equilibrium balance (equilibrium when the motion) , static balance (equilibrium when no movement) , and axial (stretching). Locomotor movements such as walking, running, jumping , hopping on one foot , run fast, and jumping jacks. Manipulative movements such as reaching, holding, releasing, throwing, catching, kicking, and hitting. Each movement is done gradually and in the process of developing.

Children at a stage when the child is able to throw expert to effectively throw without prediction in such a game and be ready to learn to throw that used relatively complex and changing environment according to the characteristics of the sport.

### 3 . Methods of Learning

#### a. Playing method

Play can also be used as a form of physical activity for teaching , can also be used to attract , develop knowledge , improve skills specific to the child's abilities , improving motivation and encouraging , and brings to life the same or a social life . In designing or planning a form of the game , which is important to note is the feeling of pleasure that is characterized by laughter , and togetherness which is the basis for the formation of a sense of social ( Mayke S. Tedjasaputra , 15 : 2001) .

The forms of play are selected and carefully packed and well is a very meaningful program in physical

education . As described by Gabbard , et al that one of the aspects of physical education for the kids are playing ( Susan Lowy , 362 : 1987). Play is an activity that is always done by children every day . Over time, children use it for play activities. According to Hurlock (390:1996), meaning that the right to play is an activity that is done for the pleasure of it, without considering the end result . In other words, play performed by the children's play activities have a purpose for themselves so that children feel happy . Thus, play is voluntary and no coercion or pressure from the outside that requires a child to engage in play. Almost similar to Rubin , Seefeld and Barbour (303 : 1994) describes six elements of the criteria for determining an activity can be said to be a play , namely : (1) play intrinsic motivation . Children's play activities are the result of the encouragement that is in him and not imposed from outside, (2) play is a fun activity , which manifested out with a variety of different cheerfulness, (3) play is flexible and free from rules imposed from outside . This varies from one situation to another and from one person to another person, (4) is non literal play. This requires players seem to realize what was happening was not really happening. Play is not limited by reality, but the action is an event that seemed to appear really happened, (5) requires the activity of playing verbal, mental and physical. Therefore, though perhaps lazing fun but not put into play criteria, and (6) play a free choice. The involvement of children in the activity comes from their own choices. If forced by adults, the activities carried out by the child no longer qualifies to play.

The game is a means that leads participants to compete, for example, to achieve victory, in which the rules have been agreed in advance. There are two elements contained in the game is a competitive nature and a set of rules. The existence of a competitive nature makes children feel challenged to make progress and trying to overcome the problems encountered and faced in the game. With this method of playing a lot of things that gained children, both in terms of health, personal development, and social attitudes.

#### **b . Exploration methods**

Exploration, Elaboration, and Confirmation is a component that must be present in every classroom learning process. Exploration in the educational process of course is an attempt to find out the state of the current students, including students who are late or who are not present at the time of the learning process (Krismanto, 1 : 2003) . Exploration can also find out neatness, orderliness, cleanliness class. Professional educators will not start learning before the class is clean and tidy and always check the students in order to obey school rules that have been set. Note the complete exploration of an educator very useful when making value attitudes. With this exploration activity , the students are expected to improve the ability of imagination , intuition , divergent thinking, gave birth to the original work , predict and suspect (conjecturing) , try (trial and error) , as well as to facilitate the students' curiosity. The characteristics Explores based learning: (1) Engaging learners seek information (specific topic), (2) Using a variety of approaches, media and learning resources, (3) facilitate the interaction among learners.

Psychic development is also coupled with the physical growth of a child much influence on the diversity and the orientation of the child in play. Such as when they entered the early childhood age, activity ran , jumping up and down at will, or stair climbing rope, play various types of dolls , skating , hanging , digging or sand pouring , measuring and water play, organize objects with different design will become commonplace in their daily lives. Exploration is an activity where children can play in any game activities that they love spontaneously and without any participation of the teachers in it. Children are free to determine his playing instrument, playing time, location, and also my friends involved. In this case, the teacher is only a facilitator in schools.

#### **4. Nutritional Status**

In the assessment of nutritional status of school pupils, measurements can be conducted benchmarks that are commonly used in measures of nutritional status assessment. Assessment of nutritional status can be done directly or indirectly. Nutritional adequacy is influenced by age, gender, activity, weight and height, and genetics. In the calculation of the recommended dietary allowance generally calculated variation factors of individual needs, but to find a general overview of the nutritional adequacy can use both benchmark and weight.

To be able to meet the nutritional adequacy it would have to consider the adequacy of each dose of nutrients required by the human body, namely carbohydrates, proteins, fats, vitamins , minerals, and water (Suharto, 18 : 1998). In the health sciences, weight is an important parameter to determine the status of human health, especially that associated with nutritional status .The occurrence of malnutrition among children is not only caused by poor dietary intake of the dietary needs of children, but most parents do not know the assessment of nutritional status in children, that society or family only knows that the child should be given a meal as well as adults should eat each day. Anthropometry as an indicator of nutritional status can be done by measuring several parameters. The parameter is the size of a single human body, in determining the nutritional status of the parameters that are often used include: age, weight and height. Anthropometric parameters is the basis of assessment of nutritional status (Susilowati, 2 : 2008).

Measurement of several parameters. Anthropometric index is a measure of the ratio of one or more measurements or associated with age. Some anthropometric indices:

- 1.The Weight of the Age
- 2.Height of the Age
- 3.Weight to Height
- 4.Upper Arm of the Age
- 5.Body Mass Index (BMI)
- 6.Thick Fat Bottom Skin by Age
- 7.Ratio Waist and Hips. (Susilowati , 49 : 2008) .

Children said in a state of healthy nutrition when comparing proportional to the hose body weight / height (weight / height) specific (Kumaidi, 138 : 1994) . Weight loss has a linear relationship with height. Under normal circumstances, the development of body weight will be in line with the growth in height with a certain velocity. Jellife in 1966 this index has been introduced to identify the nutritional status, the index weight / height is a good indicator for assessing the nutritional status of the present. (Dewa Nyoman, 58: 2001).

To determine the nutritional status classification required no limits called the threshold. These limits are relatively different in every country , it depends on the agreement of the nutritionists in the country. Based on the nutritional status of the Harvard book can be divided into four, namely :

- a. Nutrition for overweight, including overweight and obesity .
- b . Good nutrition for normal well nourished included .
- c . Malnutrition for under weight , including lean .
- d . For severe malnutrition, including very thin (Dewa Nyoman, 73 : 2001) .

So is the nutritional status of children according to the above theory is the state of health of the child is determined by the degree of the physical needs of energy and other nutrients derived from food and physical impact of food measured anthropometry .

## 5 . Methods Research

The method used in this study is an experimental method with 2 x 2 design. Determination Sudjana design refers to the opinion, the experimental units are grouped in the cell such that the experimental units within a relatively homogeneous cell experiments and many units in the same cell with many treatments being studied (Sudjana, 109-124: 1994). Treatment is done randomly to experimental units within each cell.

Sampling Method :

Of the 48 samples are given tests "Weight / Height" to determine the level of nutritional status. The sorted ranking group is then taken from the top 27 % of the group who has a good nutritional status and 27 % of the bottom of the group with poor nutritional status. From the above calculation of the percentage determined for a sample of 12 students who have a good nutritional status, in the same way , determine the sample of 12 children who had poor nutritional status, so the total sample of 24 children . While the group that occupies a middle position (the moderates) as many as 24 children not be included in the study.

**Table 1. Factorial Design 2 x 2**

Methods of Learning (A)		
	Playing (A1)	Exploration (A2)
Nutrition Status (B)		
Good (B1)	A1B1	A2B1
Poor (B2)	A1B2	A2B2
Total	X	X

Description:

- A1 : The method of learning to play  
A2 : exploratory learning method  
B1 : group of children who had a good nutritional status  
B2 : Group of children with severe malnutrition  
A1B1 : Group child nutritional status either by the method of play  
A2B1 : Groups children good nutritional status with exploration methods  
A1B2 : The group of children with poor nutritional status play method  
A2b2 : The group of children with poor nutritional status of exploration methods

## 6. Results

- a. Frequency distribution of the results of throwing a ball that was given method of learning to play

No	Interval Class	Pre Absolute	Pre Relative	Pre Cumulative
1	28,5 - 30,1	2	16.67	16.67
2	30,2 - 31,8	2	16.67	33.33
3	31,9 - 33,5	2	16.67	50.00
4	33,6 - 35,2	2	16.67	66.67
5	35,3 - 36,9	4	33.33	100.00
	Total	12	100	

The above table indicates that the data has a normal distribution. Furthermore, the frequency distribution shows that the students who scored in the group average is as much as 2 people (16.67%), students scoring above the group average of 6 people (50%), and students scoring below the group average of 4 people (33.33%).

- b. The results are given learning to throw a ball by learning methods Exploration

No	Interval Class	Pre Absolute	Pre Relative	Pre Cumulative
1	28,5 - 29,5	4	33.33	33.33
2	29,6 - 30,6	3	25.00	58.33
3	30,7 - 31,7	2	16.67	75.00
4	31,8 - 32,8	1	8.33	83.33
5	32,9 - 33,9	2	16.67	100.00
	Total	12	100	

The above table indicates that the data has a normal distribution. Furthermore, the frequency distribution shows that the students who scored in the group average is as much as 2 people (16.67%), students scoring above the group average of 3 people (25%), and students scoring below average group of 7 people (58.33%).

- c. The frequency distribution of learning outcomes throw a ball given learning method for students who play nourished

No	Interval Class	Pre Absolute	Pre Relative	Pre Cumulative
1	32,5 – 34,5	3	50.00	50.00
2	34,6 – 35,6	2	33.33	83.33
3	35,7 – 36,7	1	16.67	100.00
	Total	6	100	

The above table indicates that the data has a normal distribution. Furthermore, the frequency distribution shows that the students who scored in the group average is as much as 2 people (33.33%), students scoring above the group average of 1 people (16.67%), and students who scoring below the group average of 3 people (50%).

- d. Frequency distribution of the results of learning to throw a ball given learning method for students to play with the status of malnutrition

No	Interval Class	Pre Absolute	Pre Relative	Pre Cumulative
1	28,5 – 30,8	4	66.67	66.67
2	30,9 – 33,2	1	16.67	83.33
3	33,3 – 35,6	1	16.67	100.00
	Total	6	100	

The above table indicates that the data has a normal distribution. Furthermore, the frequency distribution shows that the students who scored in the group average is as much as 1 (16.67%), students scoring above the group average of 1 people (16.67%), and students who scoring under group gained an average of 4 people (66.67%).

- e. The results of the study were given a ball throwing exploratory learning method for students who nourished

No	Interval Class	Pre Absolute	Pre Relative	Pre Cumulative
1	28,5 – 30,2	1	16.67	16.67
2	30,3 – 32	4	66.67	83.33
3	32,5 – 34,2	1	16.67	100.00
	Total	6	100	

The above table indicates that the data has a normal distribution. Furthermore, the frequency distribution shows that the students who scored in the group is the average of 4 people (66.67%), students scoring above the group

average of 1 people (16.67%), and students who scored below the group average of 1 people (16.67%).

- f. The results of the study were given a ball throwing exploratory learning method for students who are suffering from severe malnutrition

No	Interval Class	Pre Absolute	Pre Relative	Pre Cumulative
1	28,5 – 30,2	3	50.00%	50.00%
2	30,3 – 32	1	16.67%	66.67%
3	32,5 – 34,2	2	33.33%	100.00%
	Total	6	100	

Table Summary of Analysis of Two Ways Variance

Variance Sources	JK	db	RJK	Fo	F-table	
					0,05	0,01
Learning Methods (A)	30,375	1	30,375	7,87**	4,26	7,82
Nutrition Status (B)	26,041	1	26,041	6,75*	4,26	7,82
Interaction AB	78,458	1	78,458	20,33**	4,26	7,82
Error (D)	77,166	20	3,858			
Total (T)	155,62					

Description:

db = Degrees of freedom

JK = Sum of Squares

RJK = Mean Sum of Squares

F o = F count rates

F table = Price F table on  $\alpha = 0.05$  and  $\alpha = 0.01$

\* = Significant (at  $\alpha = 0.05$ )

\*\* = High significant (at  $\alpha = 0.05$  and  $\alpha = 0.01$ )

Table Summary of Tukey Test

No	Compared group	Q count	Q table $\alpha=0,05$	Descriptions
1.	A1 and A2	3,831	2,09	Significant
2.	A1B1 and A2B1	5,206	2,26	Significant
3.	A1B2 and A2B2	0,412	2,26	Not significant

Descriptions

A1 = group learning methods play as a whole

A2 = group learning method overall exploration

A1B1 = good nutritional status with the group learning methods play

A2B1 = group with a good nutritional status of exploratory learning method

A1B2 = poor nutritional status with the group learning methods play

A2b2 = group of poor nutritional status with exploratory learning method

## 7. Conclusions

Based on the data obtained , the results of hypothesis testing and discussion of the results of the study can be summarized as follows :

1. The whole method of learning to play better than exploratory learning method to learn the results of throwing the ball on first grade students of SDN 16 Cipinang Besar Selatan, East Jakarta.
2. Those students who have a good nutritional status after learning to play better learning method than students who studied the methods of exploratory learning on learning outcomes of throwing the ball on first grade students of SDN 16 Pagi Cipinang Besar Selatan, East Jakarta.
3. Those students who have poor nutritional status after being trained with the method of learning to play better than the students who trained with exploratory learning method to learn the results of throwing the ball on first grade students of SDN 16 Cipinang Besar Selatan, East Jakarta .
4. There is interaction between learning methods and nutritional status on learning outcomes of throwing the ball on first grade students of SDN 16 Pagi Cipinang Besar Selatan, East Jakarta .

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